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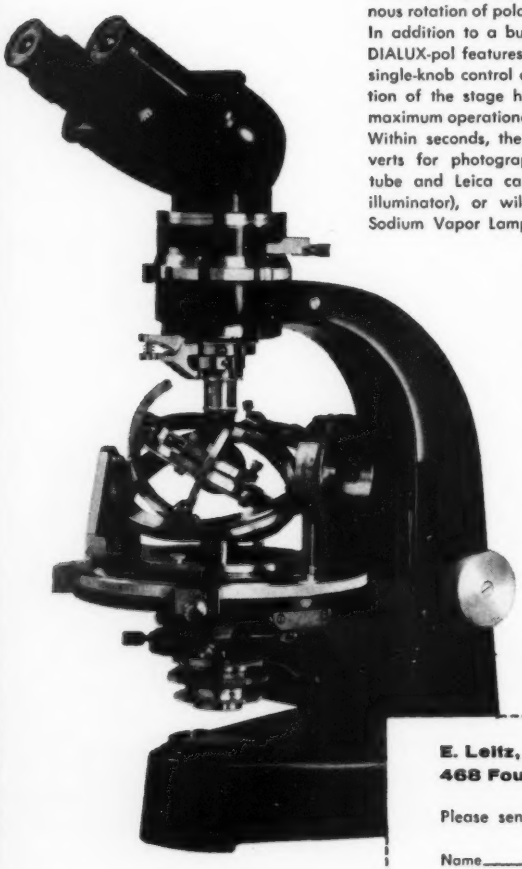

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Calendar

Cooperation of Society Secretaries in supplying meeting notices for GEOTIMES calendar is requested.

April 17-18, 1958—SEGp, 11th Annual Midwestern Meeting sponsored by Geophys. Soc. of Tulsa & the Tulsa Geol. Soc., Mayo Hotel, Tulsa, Okla.

April 17-18, 1958—AIME, SOC. PETROLEUM ENGINEERS, Gas Technology Symposium, Lou.-Ark., Miss. & East Texas Sections, Shreveport, La.

April 17-19, 1958—SIGMA GAMMA EPSILON, 19th Biennial Convention, Pittsburgh, Pa.

April 17-19, 1958—AIME: PACIFIC NORTHWEST REGIONAL CONF., Spokane, Wash.

April 18-20, 1958—AIME, Alaska Sect., 3rd Ann. Mtg., Mining, Mineral & Petroleum Conf., Univ. of Alaska, College, Alaska.

April 21-22, 1958—FOURTH INSTITUTE ON LAKE SUPERIOR GEOLOGY, sponsored by Superior Geology Club & Univ. of Minnesota, at Duluth Branch of the University, Duluth 11, Minn.

April 23-25, 1958—SECOND INTERNATIONAL WILLISTON BASIN SYMPOSIUM, sponsored by Sask. Geol. Soc. & N. D. Geol. Soc., Provincial Museum Bldg. Conv. Hdqtrs. Hotel Saskatchewan, Regina, Sask. Write: Hous. Comm., P.O. Box 234, Regina, Sask.

Apr. 27-30, 1958—AAPG, ROCKY MTN. SECTION, 8th Ann. Conv., Industrial Bldg., Natrona County Fairgrounds, Casper, Wyoming.

April 27-May 1, 1958—AMER. CERAMIC. SOC., 60th Ann. Mtg., Penn-Sheraton Hotel, Pittsburgh, Pa.

May 1-3, 1958—GSA, SOUTHEASTERN SECTION, Co-sponsors are Ala. Geol. Surv. and Dept. of Geol., Univ. of Ala.; Theme: Economic Geology of the Southeastern U. S. in relation to future world events. Hotel Stafford, Tuscaloosa, Ala.

May 5-6, 1958—AIME, SOC. PETROLEUM ENGINEERS, Third Biennial Secondary Recovery Symposium, Wichita Falls, Texas.

May 5-6, 1958—AIME, High Temperature Materials & Their Resources Conf., Ambassador Hotel, Los Angeles, Calif.

May 5-7, 1958—AGU, Thirty-Ninth Ann. Mtg., Nat. Acad. Sci., Washington, D. C.

May 8-10, 1958—GSA ROCKY MOUNTAIN SECTION, annual meeting, Golden, Colo.

May 9-11, 1958—AIME: URANIUM SECT., 3rd Annual Uranium Symposium, Moab, Utah.

May 17-18, 1958—FRIENDS OF THE PLEISTOCENE; for information write: Wilson M. Laird, Univ. of North Dakota, Grand Forks, N. D.

June 19-25, 1958—SCANDINAVIAN-AMERICAN Meteorological Mtg., Write: Mr. Finn Pederson, Secretary, Norwegian Arrangements Comm., Vervarslinga, Bergen, Norway.

July 4-7, 1958—SWEDISH GEOLOGICAL SURVEY, 100th Jubilee Meetings, Stockholm, Sweden. Excursions before and after meetings.

Aug. 24-30, 1958—INTNTL. CONGRESS OF PREHISTORY & EARLY HISTORY, Hamburg, Germany. For information write: Professor Gerhard Bersu, Frankfurt-am-Main, Palmengartenstrasse 10-12.

Aug. 26-28, 1958—SYMPOSIUM ON PROBLEMS OF THE LAHONTAN BASIN, spons. by Sigma Xi Club of Univ. of Nevada, on campus, Reno, Nevada.

Sept. 2-4, 1958—SVP: Annual Meeting with SSE, University of Michigan, Ann Arbor, Mich.

Sept. 2-5, 1958—NINTH ALASKAN SCIENCE CONF., Univ. of Alaska, College, Alaska

Sept. 10-12, 1958—AIME: SOC. OF MINING ENGRS., Rocky Mountain Mins. Conf., Salt Lake City.

Oct. 5-8, 1958—AIME: SOC. PETR. ENG., Ann. Fall Mtg., City Coliseum—Rice Hotel, Houston, Texas.

Oct. 9-11, 1958—OPTICAL SOC. OF AMER., Ann. Mtg., Statler Hotel, Detroit, Michigan.

Oct. 13-16, 1958—SEGp: 28th Ann. Meeting, Gunter Hotel & Municipal Auditorium, San Antonio, Texas.

Oct. 16-17, 1958—AIME: Southern California Petroleum Sect. Fall Meeting, Biltmore Hotel, Los Angeles.

Oct. 22-24, 1958—AAPG, Southwest Regional Meeting, sponsored by SW Fed. of Geol. Socs., City Auditorium, Mineral Wells, Texas.

Oct. 23-25, 1958—AIME: Mid-America Minerals Conference, St. Louis.

Oct. 27-29, 1958—GULF COAST ASSOC. OF GEOLOGICAL SOC'S., Ann. Mtg., Corpus Christi, Texas

Nov. 6-7, 1958—AAPG: PACIFIC SECT. Ann. Mtg., Ambassador Hotel, Los Angeles, Calif.

Nov. 6-8, 1958—GSA: ANNUAL MEETING, St. Louis, Mo. Also SEcG, SVP, PS & AGT.

1958 SCHEDULE OF FIELD TRIPS

April 10-12, 1958—SEPM, SPRING FIELD TRIP of the Permian Basin Sect., to localities in Apache, Wylie, Van Horn & Indio Mt., Trans-Pecos Texas. Registration at Van Horn April 10. Write: Wayne Roye, Box 633, Midland, Texas.

April 12—ILLINOIS Geol. Survey, Urbana, Ill. Mississippian of Hardin County.

April 19-20—SACRAMENTO Geol. Soc., Sacramento, Calif. To Mother Lode Country.

April 20—Field trip in connection with 4th Institute on Lake Superior Geology.

April 26—ILLINOIS Geol. Survey, Urbana, Ill. Field trip of glacial & Pennsylvanian of Fulton County.

May 9-11, 1958—N.Y. STATE GEOLOGICAL ASSOC., 30th Ann. Field Mtg., Shustin's Locust Manor, Locust Ave., Peekskill, N.Y.

May 10—GSA, Rocky Mtn. Sect., Ann Mtg., Golden, Colo. Field trips in conj.

May 10—ILLINOIS Acad. of Science, Urbana, Ill. Pleistocene & Pennsylvanian of Champaign-Urbana.

May 15-17—CORPUS CHRISTI Geol. Soc., Corpus Christi, Tex. Field trip of Texas coastal area.

May 17—ILLINOIS Geol. Survey, Urbana, Ill. Glacial, Ordovician & Silurian of Kane & Cook Counties.

Aug. 14-16—BILLINGS, MONT., Geol. Soc. 9th Ann. Field Conf., to Bear Tooth Mtns. immediately north of Yellowstone Park. Reservations (until July 15) must include $5.00 room fee. Write: Publicity & Reservation Comm., Box 1982, Billings, Mont.

Aug. 20-23—ALBERTA Soc. of Petr. Geol., Calgary, Alta. Field trip to Front Range Canadian Rockies.

Sept. 17-20—KANSAS Geol. Soc., Wichita, Kansas. To south central Colorado.

Sept. 18-20, 1958—ROCKY MT. ASSOC. OF GEOLOGISTS Field Trip, Maroon Basin of N.W. Colo., to be held in conjunction with Colo. Pennsylvanian Symposium guidebook presentation. Date is tentative.

Oct. 4, 1958—UTAH GEOLOGICAL SOC., Ann. Field Trip to Stansbury Range. Write: 200 Mines Bldg., Uni. Utah, Salt Lake City, Utah.

Oct. 16-18—NEW MEXICO Geol. Soc., Roswell, N. M. To Black Mesa Basin.

Oct. 27-29—GULF COAST ASSOC. of Geol. Soc's., Corpus Christi, Tex. Trip as conducted by Corpus Christi May 15-17.

AGI PUBLICATIONS

EARTH FOR THE LAYMAN *by Mark W. Pangborn, Jr., about 64 pages, 1957, $1.00 paper bound.*

An annotated listing of more than 1400 popular books on geology and related subjects for lad, lass and layman. The book is conveniently divided by subject. Books suitable for youth are particularly noted. Professional geologists themselves will find this valuable for references on history of geology and biographies of famous geologists.

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GLOSSARY OF GEOLOGY AND RELATED SCIENCES, *J. V. Howell, Coordinating Editor, 325 pages, 1957, $6.00.*

A comprehensive glossary containing nearly 14,000 terms compiled by more than 90 specialists working under auspices of the American Geological Institute. More than 7,000 copies sold in six months. This is a major contribution to geologic literature.

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AGI REPORT 11, *1956-57 Edition* "DEPARTMENTS OF GEOLOGICAL SCIENCES IN THE EDUCATIONAL INSTITUTIONS OF THE U. S. AND CANADA." *196 pages, 1957, $1.50.*

Detailed listing of faculty, courses, degree requirements in college departments offering geology and geophysics. Also lists geology summer camps. An aid to prospective students, academic administrators and industry personnel departments.

DIRECTORY OF GEOLOGICAL MATERIAL IN NORTH AMERICA, *Second Edition, 1957, by J. V. Howell, A. I. Levorsen, with Robert H. Dott and Jane W. Wilds of the AAPG, over 300 pages, cost $3.00.*

An indispensible volume with information on sources and availability of geological journals and selected literature, geologic maps and base maps, aerial photographs, libraries, geological services and supplies, and sources which are provincial and state in scope are listed separately. This is invaluable to the practicing geologist and an important addition to the library of the student. This is one reference book which will travel with you wherever you go.

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AGI REPORT 12, *1956 Edition,* "SURVEY OF GEOLOGY-GEOPHYSICS STUDENTS IN THE COLLEGES AND UNIVERSITIES OF THE U. S. IN 1955-56 AND OF AVAILABLE SCHOLARSHIPS, FELLOWSHIPS, ASSISTANTSHIPS, ETC." *1956, $0.50.*

A detailed listing of geology and geophysics graduates by school, together with generalized data on available financial aids.

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AGI REPORT 12, *1597 Edition,* "SURVEY OF GEOLOGY-GEOPHYSICS STUDENTS IN THE COLLEGES AND UNIVERSITIES OF THE U. S. AND CANADA IN 1956-57," *$0.50.*

Contains detailed information on 1957 student survey, but does not contain scholarship-fellowship data listed in the 1956 report above.

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Strangely Silent

Educated people throughout our country are supposed to be gravely concerned over the deficiencies of our educational system. The press, TV and radio have carried many articles pointing up the problems. Many diverse bills to aid science education and education in general have been introduced in the present session of Congress. Members of Congress are extremely sensitive to public response. Letters and other communications from their constituents are to them an important index of urgency. *We are informed, however, that Congressmen are very puzzled about the issue of education legislation, for the public is strangely silent.* Does this mean we are disinterested?

Our nation has undergone a tremendous change in recent years from a culture depending greatly on manual labor to a highly complex culture based on science and technology which requires a high order of intellectual and technical skills. American people, though cognizant of this trend, have failed to provide and properly support educational institutions needed to meet this challenge to education. Our schools must share in part the blame for our present apathy toward the crisis in education, for they have failed in several respects to provide the kind of education needed to stimulate and fully develop the intellectual resources of our people. Much of what is wrong with education today, however, can be traced to the home and the general disinterest in intellectualism which exists there today.

Of the host of bills introduced in the present session of Congress, most attention is being given in Committee to two: S. 3187, introduced by Senator Lister Hill and S. 3163, the administration-sponsored bill introduced by Senator Smith. It is probable that if any legislation is enacted it will be a compromise between these two bills. You can become acquainted with the provisions of these bills by requesting a copy of the booklet *"A Comparison and Analysis of the Major Provisions in S.3187 and S. 3163" from the Committee on Labor and Public Welfare, United States Senate, Washington, D. C.*

It is not our intent to regiment thinking on the education issue—our interest is in promoting individual thinking and action.

OUR COVER

In the spring the geologist's thoughts turn to the field. This instrument man is working the Big Horn Basin, Wyoming. Photo by courtesy Standard Oil Co. (N. J.)

The AMERICAN GEOLOGICAL INSTITUTE is a non-profit professional service organization established and managed by the scientific societies in the fields of geology and geophysics in cooperation with the National Academy of Sciences-National Research Council. It is the instrument of the profession serving and advancing the welfare of the geoscientist in matters relating to education, professional responsibilities and government relations. It is an active member of the Scientific Manpower Commission. It also functions in the stimulation of public education and awareness of the earth sciences, through career literature, the scouting program and other channels of communication.

GEOTIMES is the news magazine of the geological sciences. It reports on current events in the earth sciences, public education and public relations efforts throughout the profession, as well as appropriate legislative and governmental issues. It announces scholarships, fellowships, publications and new developments. It provides a forum for discussion of timely professional problems, and affords a common bond between the many specialized groups within the earth sciences.

Geologic Exploration and Exploration Geologists In Times of Economic Recession

by

JOHN D. RIDGE

For the first time in the memory of those whose professional experience does not antedate World War II, geologists are being laid off by commercial and government organizations and are having difficulty in obtaining new positions. That this is a serious situation for the individuals involved there is no question; that it is serious for the extractive industries and for the welfare of the country as a whole is not equally appreciated though it is equally true.

The first reaction of a mining company which cannot sell all it produces is to see if other companies are cutting their production and, if they are, to decide if it too must reduce its output or if the others are lowering theirs sufficiently to allow it to continue to maintain its current rate. In most instances, the answer is that the company in question must also reduce its output; this is particularly true if, as is the situation today, the prices of metals are lower abroad than they are in this country. Even the most patriotic consumer of metals in the United States will buy 22 cent copper from a foreign source rather than 25 cent copper from a domestic producer. Thus, in times of lowered metal demand, such as obtain today, lower-priced metal from abroad multiplies the pressure on the American producer to cut his domestic production. Furthermore, cutting production insures his selling all he produces only when domestic production has dropped enough that its tonnage, plus that of available low-priced imports, equals U.S. demand. Thus, not only is the U.S. producer who cuts his production reducing his own income but he is at the same time adding to the revenue of any foreign company that can afford to sell in this country at less than U.S. prices.

To complicate the situation further, U.S. custom smelters or smelters of large companies which depend for their concentrates largely on foreign sources often can and do undersell domestic producers who both mine and smelt their raw materials in this country. Production cutbacks by entirely domestic firms, of course, increase the share of the U.S. market which will go to smelters obtaining their concentrates from abroad as well as that of foreign firms. Despite a realization of this situation, the present rules of the game do not give the domestic operator an alternative to reduced production. The differential between what he charges and the price of foreign metal or of metal produced from foreign concentrates has already reduced his share of the market, and his cutbacks in production are simply the expression of his recognition of this fact. No U.S. metal producer can continue to build up his inventories of refined metal indefinitely because he wants to continue to operate at a certain capacity. Even in operations in which a reduction in capacity means a marked rise in costs per ton of metal produced, cutbacks eventually must come, or the funds tied up in unsold metal will bankrupt the organization even faster than higher unit costs.

[1]John D. Ridge is professor and head of the Department of Mineral Economics, School of Mineral Industries, Pennsylvania State University.

The views herein expressed by the author do not necessarily reflect those of the School.

GEOLOGISTS VULNERABLE

The answer to the problem just outlined, if there is one, is beyond the scope of this article, but its affect on mining geologists, mining companies, and the nation as a whole is important enough to be considered in some detail. Once the average mining company (or petroleum company for that matter) has decided on a production cut, it immediately attempts to adjust to its lowered income, a lowering especially drastic because not only are fewer tons of product being sold but also appreciably fewer

dollars are being obtained per ton than in times of higher demand. Although there are many ways in which a corporation can attempt to cut costs, as is discussed in detail in Fortune for March 1958, one of the first methods of economy which the average mining company attempts to employ is to reduce the number of its employees. There are two classes which are most vulnerable to such reductions, the actual working miner and the exploration geologist. Fewer tons of ore per day require fewer miners, and fewer tons per day mean that reserves will last longer and do not require supplementing by further discoveries with the immediacy that exists in times of high demand. This puts exploration geologists at the head of the list of expendable personnel, puts many of them out of work in the early days of a recession, and makes it difficult for them to get jobs in their own field for its duration since all companies have essentially the same attitude toward exploration.

No one who remembers the depression of the 30's needs to be reminded of the economic climate of a true depression, and those who are now making their first acquaintance with a far lesser economic recession can readily imagine what the real thing is like. There is no need, therefore, to belabor the effect of such policies on the individual geologist.

Crash Programs Inefficient

What are, however, the effects, on the mining companies? For a few months or even years, the operation goes on much as usual, particularly if the resident geologist and his staff have not been completely done away with. But sooner or later, whether demand rises or remains at a low level, ore becomes scarce in the known properties of any company, and the savings in the exploration department have to be paid out at compound interest. Crash programs are adopted to find ore, men are hired quickly to build up or reconstitute the exploration who may or may not be potentially as good as the ones they replace but who certainly are not as experienced in the problems of the company in question. As is true of all jobs done in a hurry, corners are cut so that much ore is missed in areas not properly studied, mines, if found, are brought into production more rapidly than is consistent with sound planning and development, and long range planning and exploration for the more distant future is seldom laid out and even less often carried through. In many instances the new exploration program does not pro-

(Continued on page 20)

PARDON ME SIR!

May I encourage you to make a 1958 contribution to aid my little pal, "George" who has a big job in bringing GeoTimes to 30,000 of you each Month.

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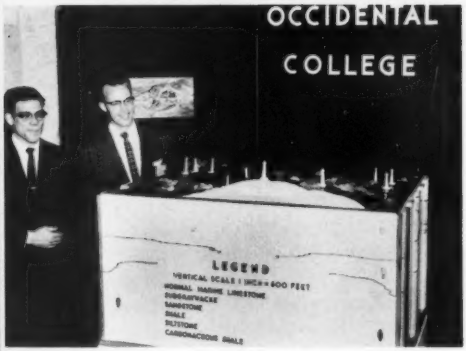

AAPG-SEPM
Los Angeles Meeting
Highlights

More than 3,000 geologists and geophysicists attended the Annual Meeting of the American Association of Petroleum Geologists and the Society of Economic Paleontologists and Mineralogists held in Los Angeles March 10-13. Due to the excellent arrangements by the Pacific Section, AAPG, the meeting hosts, and the fine assistance of the Local Desk and Derrick Club girls, the whole show went off with unusual smoothness.

(Continued on next page)

(TOP RIGHT) U. S. Grant IV, president of the Pacific Section AAPG, chats with past president of the section, Martin Van Couvering.

TOP LEFT: Incoming AAPG president, George S. Buchanan is photographed with retiring president Graham B. Moody and a number of past presidents in attendance. FRONT ROW *(from left)* Graham B. Moody, Paul Weaver, Frank R. Clark, Wallace E. Pratt, G. S. Buchanan, Edward A. Koester. BACK ROW *(from left)* F. H. Lahee, John E. Adams, F. L. Aurin, Earl B. Noble, Theodore A. Link, Morgan J. Davis, A. I. Levorsen, Edward W. Owen.

UPPER CENTER: Occidental College students test the oil-finding prowess of conventioneers with working model.

LOWER CENTER: Graham B. Moody, past president AAPG *(left)* looks over meeting program with George S. Buchanan, AAPG's new president.

BOTTOM: Miss Sandberg, pictured here, was one of four attractive Los Angeles Desk and Derrick Club girls who aided AGI by staffing the Institute's booth which featured new publications.

Keynote address for the general session was given by Monroe E. Spaght, Executive Vice President, Shell Oil Company. Mr. Spaght discussed the challenges with which we as a country are faced today. Speaking of problems of science and education he commented, "Perhaps an even more heartening sign has been the general rise in the respectibility of knowledge." He pointed to the need for "developing an enlightened citizenry for intelligent living in the age of science" and stated that, "It is no longer enough for governors to understand the art of government. They must also understand the great new force of science that will come increasingly to bear on all governments and all men for as many years as the mind can imagine." Finally, to bring home the theme of his talk, *The Minutes of the Last Meeting*, Mr. Spaght urged that the profession fully examine the records of what has gone before both in scientific fields and in human events.

In his address as retiring president of AAPG, Graham B. Moody called for a rededication of the petroleum geologist to the ever difficult task of finding oil. He urged that educational sights be sharply raised to place emphasis on quality rather than quantity to meet the challenge

Scale in Exploration was the title of a hard-hitting talk by O. C. Clifford, Jr., President of the Society of Exploration Geophysicists. His statistics on the sharply rising costs of finding a barrel of oil in this country using geophysical and/or geological control were certainly not comforting. He urged that the profession be more critical of the cut-off point in exploration and suggested that in some instances exploration was being carried beyond the point of diminishing returns.

All of the clouds which hung over the meeting were not in the gloriously sunny California skies. A rather ominous cloud of uncertainty resulting from the current business recession, the decline in domestic crude oil demands and the sharp drop in exploration activities, pervaded the entire meeting. The employment interview service, which has been a booming business at AAPG meetings of recent years, attracted only a handful of recruiters.

The central theme of the meeting was the petroleum possibilities and developments in lands bordering the Pacific Ocean. A symposium was devoted to problems of correlating and interpreting sedimentary facies and another dealt with silica in sediments. There were also a number of general sessions.

The AAPG has been conducting a grass roots appraisal of local sentiment of members of the Association concerning the continuing support of the AGI. At the business meeting of the Association, the Executive Committee received reports from district representatives who, with few exceptions, spoke staunchly in favor of continued support of the Institute. Criticism was levelled by one local group at GeoTimes, which they felt should be greatly improved or discontinued. After receiving the reports the Association voted to continue support at the present level, with the recommendation that such support be assured the Institute for three years. The review of AGI's program and activities by AAPG was conducted by retiring Vice President B. Warren Beebe who did an excellent job of presenting the issues objectively.

There were numerous social events for those attending and, of course, night-fall found many geologists out on the town. There was a field trip covering the geology and oil fields of the Ventura and Los Angeles basin. One of the meeting highlights was the 350-mile airborne field excursions over the Southern California area. Unfortunately several of these field trips by air had to be cancelled due to uncooperative (if we may use the expression) Southern California weather.

There were some unusually fine educational exhibits and a host of commercial exhibitors. Probably the most impressive commercial exhibit was the cute red-headed nurse who staffed the "hang-over bar" for Failing.

The AGI exhibit featured publications of the Institute. Copies of the new career booklet "Shall I Study Geological Sciences" which were distributed received many favorable comments. The March issue of GeoTimes was flown to the meeting by our printer, Williams & Heintz Lithograph Corp. In cooperation with the California Division of Mines they included a very attractive colored geologic map of the San Fernando Quadrangle, California, in the magazines distributed at the meeting. The map was printed by Williams & Heintz. The AGI was particulary indebted to the Desk and Derrick Club for staffing the booth during the meetings.

The Executive Committee and Board of Directors of the American Geological Institute met during the Los Angeles sessions. The new Public Relations Committee under Chairman Frank Gardner also met. The Mission 66 Committee held an informal session. Some very important deliberations of these Institute meetings will be announced in the May Issue of GeoTimes.

THE UNTERMANNS OF VERNAL

A Dedicated Husband-Wife Geologist Team

ABOVE: Utah Field House of Natural History, in Vernal State Park is devoted principally to the geologic history of the Uinta area.

BELOW: Gerald and Billie Untermann are a man-wife geological team who have made a major contribution to popularization of geology.

The geological profession has been indeed fortunate to have the services of many husband and wife teams. Common interest in geology has been further fortified by the bond of marriage to produce such teams as the Knopfs—Eleanora and Adolph, the Stoses—Anna and George, Margaret Fuller and Maynard Booz, Pauline and Louis Moyd, and the Cannons—Helen and Ralph, to name but a few.

Ernest and Billie Untermann of Vernal, Utah, form one of the most dedicated husband-wife geological teams and their contributions to geology have been outstanding in several ways. The Untermanns themselves have been outstanding in several ways. The Untermanns are geologists' geologists, for they have studied and published several reports including the *Geology of the Dinosaur National Monument and Vicinity.*[2] More importantly, however, they have achieved great success in presenting the geology of this fascinating area in a manner understandable to John Q. Public. Ernest Untermann is director of the Utah Field House of Natural History in Vernal and both geologists and the traveling public are indebted to the volunteer "spare time" efforts of the Untermanns who placed markers at significant points along the geologically spectacular Vernal-Manila highway.

To the most uninitiated, perhaps the most striking feature of pleasant little Vernal, Utah, is the 76-foot skeleton cast of *Diplodocus Carnegiei* which, glaring through concrete eyes, stands guard over a modest red brick building—the State Museum. Cast in concrete, this dinosaur was constructed from molds presented to the Museum by the Carnegie Museum of Pittsburgh. Ten other duplicates of this Diplodocus skeleton, which came from the nearby Dinosaur quarries, had previously been presented by the Carnegie Museum to other museums in Mexico, South America and Europe. To the geologically oriented tourist, however, the Vernal area offers much of interest beyond dinosaurs, fascinating though they may be. There are hundreds of areas in the United States where the geological record of long sections of earth history may be viewed in beautiful panorama. But until one has stood at Harpers Corner in Dinosaur National Monument or driven through Palisade Canyon near Manila, Utah, one should not extoll too loudly the virtues of his own favorite scenic spot of geologic wonderment.

A new attraction in the land of the Untermanns is the visitors' center and museum to be opened at Dinosaur National Monument this spring as a part of the NPS Mission 66 park improvement program. No visit to Dinosaur will be complete without an hour or so in the Utah Field Museum and an opportunity to meet the Untermanns.

Who are the Untermanns? Ernest (G.E.) Unterman is the son of Ernest Untermann, Sr., widely known "Artist of the Uintahs" who died in 1956 at the age of 91. He was an artist-naturalist and was director of the Washington Park Zoo in Milwaukee when, in 1919, he was sent to Utah by a Chicago mining firm to examine a copper property. The senior Untermann fell in love with the Uintah Basin and stayed. He became acquainted with Professor Earl Douglass, who had discovered the dinosaur quarry at Jensen. The opportunity to study the dinosaur fossils led to his paintings of ancient life and landscapes

(Continued on page 19)

[1] By Joseph L. Gillson, geologist for the du Pont Company and past president of AGI.

[2] *Geology of Dinosaur National Monument and Vicinity Utah-Colorado*, by G. E. and B. R. Untermann, Bulletin 42, Utah Geological and Mineralogical Survey, 228 pp., 1954.

DALY MEMORIAL

A meeting in honor of Professor Reginald A. Daly, who died September 19, 1957, will be held at Harvard University April 17. In the afternoon, technical talks will be given by Professors Birch, Billings and Thompson of Harvard University, by Professor Buddington of Princeton University and by Professor MacDonald of the Massachusetts Institute of Technology. An evening meeting will be devoted to a discussion of the life and works of Professor Daly. The speakers will be Professors Emeriti Mather and Bridgman of Harvard University and Dr. Henry Aldrich, Secretary of the Geological Society of America.

FULBRIGHT OPPORTUNITIES

Opportunities for overseas research and lectureship awards under the Fulbright Act will be unusually numerous in 1959-60 according to a pamphlet recently issued. University lectureships are available as follows: Chile, geography (methodology); Australia, applied hydrology; India, geophysics and Pakistan, geology. Advanced research awards will be made as follows: Ecuador, mineralogy; New Zealand, paleontology, geology and geography, and Peru, geography (climatology).

About 60 Smith-Mundt Act university lectureship awards will be made in more than 25 countries. Additional information on these programs which will close April 25, 1958 is available from *Conference Board of Associated Research Councils, 2101 Constitution Ave., N.W., Washington 25, D. C.*

HISTORY OF SCIENCE

Schumann Essay Contest

Students in colleges and universities may compete in the annual essay contest established by Henry & Ida Schuman and conducted under sponsorship of the History of Science Society. History of Science and Its Cultural Influences is to be the theme of the contest essays which are to be approximately 5000 words in length and may be submitted by undergraduates or graduate students. The closing date for entries is July 1, 1958. For further details write *Prof. Raymond P. Stearns, 313 Lincoln Hall, Univ. of Illinois, Urbana, Ill.*

5th WORLD PETROLEUM CONFERENCE

New York

May 30-June 6, 1959

The FIFTH WORLD PETROLEUM CONGRESS will be held in New York City, May 30-June 6, 1959. Specific topics proposed for scientific and technical papers in Section 1 on geology and geophysics include:

- Carbonate rocks
- Dolomitization
- Petroleum geology of the offshore continental shelves
- Soft domes and other source structures
- Role of evaporites in petroleum geology
- Petroleum geology of new producing regions in the world
- Geological interpretation of geophysical and geochemical data
- New developments in geophysics
- Origin and migration of oil
- Recent sediment studies
- Methods of direct detection of oil
- New oil-finding techniques
- Unusual logistic problems in exploration and development.

MAY 15, 1958
CLOSING DATE
for
SUBMITTING TITLES
and
PRELIMINARY ABSTRACTS
(See details below)

Some 30 participating countries have been invited to contribute papers.

Contributions by U. S. authors to Section 1 should be submitted to HOLLIS D. HEDBERG, *U.S.A. National Committee, Fifth World Petroleum Congress, Gulf Oil Corp., Pittsburgh 30, Pa.* Title of proposed papers accompanied by brief preliminary abstract should be received before May 15, 1958. The deadline date for final manuscripts and abstracts is January 1, 1959. Since program space is limited, only a certain number of papers can be selected from those submitted by each country. The coordinator for Section 1 is IRA CRAM, *Continental Oil Company, Houston, Texas.*

THINK ABOUT THIS!

Geology has great potential in space age

It was with profound interest and concern that I read the piece entitled "Is Geology Asleep at the Switch" on page 5 of the February 1958 issue of GeoTimes. It is indeed quite certain that the geological sciences do not appear to be at the vanguard of science today. They rarely make headlines themselves, and participate in few if any of the spectacular scientific events that occur with ever increasing frequency.

Progress in atomic physics, rocketry, astronautics, and to a certain extent astronomy, is most often recorded on our front page headlines. Within the geological sciences, however, we find the branch of geophysics having to do with the exploration of the extreme reaches of the atmosphere and the borders of space. Geophysics, hand in hand with rocketry, astronautics, and astronomy, is a fast moving science and one that has caught the imagination of informed people all over the world. Yet while geophysics is properly a sub-division of the geological sciences, its relationship to geology often remains obscure in the minds of expert and layman alike.

Geology, as distinguished from Geophysics, has an enormous potential in the space age. It seems inevitable that man will progress slowly outward from the surface of the Earth into a true three dimensional state. What we are witnessing today is, in effect, the conquest of this third dimension. During recorded history man has been essentially a two dimensional being; in terms of the vast lateral distances over which he has moved his horizontal attainments have been minor, airplanes notwithstanding. Today, however, man has sent instrumented probes out to approximately one Earth radius from the surface. There is every indication that research rockets, satellites, and eventually lunar probes will move instrumented packages out to 50, 60, or more Earth radii. When research probes enter into lunar space man will have developed the capability of exploring another heavenly body.

Soon after this is done man himself will inevitably follow. It is not now difficult to visualize landings on the Moon and perhaps even Mars and Venus by the end of the 20th century.

Once man has attained planetary objectives geology will rapidly move into the forefront of science. Despite the fact that there is a wide series of experiments that could profitably be performed under extra-terrestrial environments, it seems likely that research involving geological exploration will be by far the most significant. True, we may eventually construct astronomical observatories, perform chemical and physical experiments under unusual environmental conditions, and undertake biological and medical research in alien surroundings. But first and foremost scientists will want to amass all possible knowledge of the satellite or planetary body, on which man descends. This, in fact, will be the basic justification behind all interplanetary undertakings. And few geologists have realized this.

All too few geological articles have appeared in the published literature regarding the potential exploration of extra-terrestrial bodies (Ref. 1, 2, 3, 4, 5, 6, and 7). There are a few works on geology as applied to lunar exploration and there have been a few scholarly articles investigating extra-terrestrial mining and the establishment of extra-terrestrial bases. There is, however, a vast amount of work that must be done in the astronautical field that can be accomplished only by geologically trained scientists. Complete geological programs must be planned well in advance so that when the time comes for man to voyage to his planetary neighbors a well throughout, highly organized method of approach will be available upon which to base his explorations. The geologist, instead of being sidestepped in the Space Age, can create in it unlimited opportunities for an exciting, rewarding future.

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7. W. W. Kellogg, OBSERVATIONS OF THE MOON FROM THE MOON'S SURFACE, Rand Report, RM-1764, 1956.

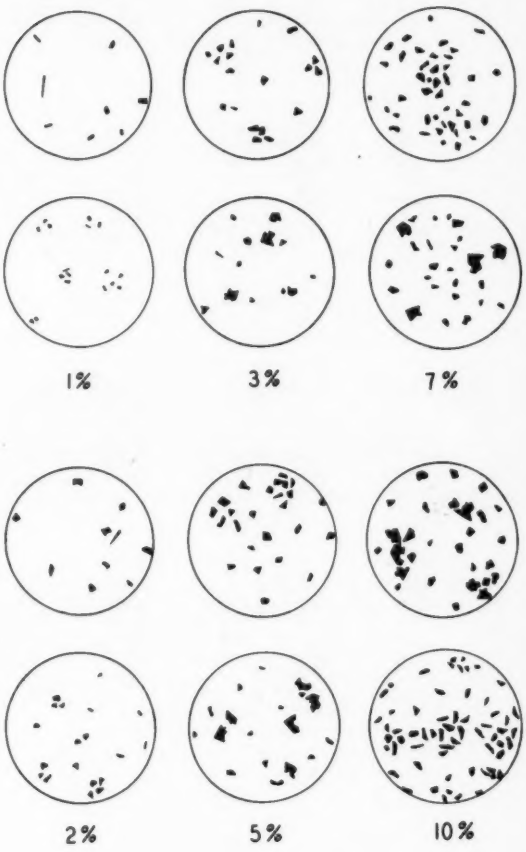
[1] This is the text of a letter to the editor of Geo Times received from FREDERICK I. ORDWAY, III, Director, Huntsville, Alabama Office, General Astronautics Corporation.

This data sheet when cut out and punched will fit a handy pocket-size notebook available from almost any stationery store. There are many and varied data sheets available commercially in this size. If you have ideas for helpful data sheets write to Dr. R. M. Foose, Stanford Research Institute, Menlo Park, California, Chairman AGI Data Sheet Committee.

AGI 6

COMPARISON CHARTS FOR VISUAL ESTIMATION OF PERCENTAGE COMPOSITION

Prepared by Richard D. Terry and George V. Chilingar, Allen Hancock Foundation, Los Angeles, Calif. Reprinted from Jour. Sed. Petrol. vol. 25, no. 3, pp. 229-234, Sept. 1955.



The above data sheet was compiled by Richard D. Terry and George V. Chilingar for the AGI Data Sheet Committee, Richard M. Foose, Chairman.

The material is reprinted from the Journal of Sedimentary Petrology, reference to which is cited on the data sheet. The diagrams were originally published in a Russian paper by M. S. Shvetsov and were reproduced by Terry & Chilingar together with an English summary of the article. Reproduced here are the references relating to visual comparisons and statistical studies cited by Terry & Chilingar in the Journal of Sedimentary Petrology.

FOLK, R. L., 1951, A comparison chart for visual percentage estimation: Jour. Sedimentary Petrology, v. 21, pp. 32-33.

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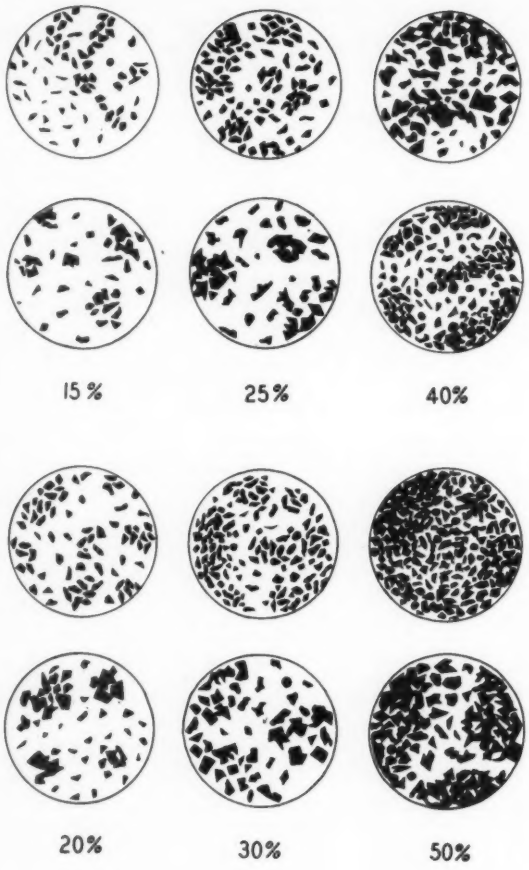

Additional copies of this data sheet may be obtained from the AMERICAN GEOLOGICAL INSTITUTE, 2101 Constitution Ave., N.W., Washington 25, D. C. $0.10.

TO MAKE A LONG STORY SHORT - The solicitation of annual contributions to support GeoTimes is just as distasteful to the editor as it is to the members of the profession to whom the "touch" is directed. However, we must face the facts: 1. Our Member Societies cannot contribute to support GeoTimes which is sent to their members; 2. GeoTimes must continue to provide its news service to all individuals in all segments of the profession.

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MANPOWER *in a column —*

By HOWARD A. MEYERHOFF
Scientific Manpower Commission
1507 M Street, N.W., Washington 5, D. C.

From the latter part of 1950 until the spring of 1957, the theme song of industry, education, and government has been the shortage of scientists and engineers. Last June, however, when campus recruiters filled 90 percent or more of their requirements for new graduates as contrasted with 60 percent or less in 1956, the tune changed. Now the $64,000 question is, "Do we have a surplus?"

A surplus of what? Metallurgists? No! Teachers? No! Geologists? Well—.

We will not hedge, but the last question must be recast so as to be answerable. Let's break it down into parts. Is there a surplus of geologists

a) at the Ph.D. level The answer is definitely No! There were only 129 Doctor's degrees granted in 1957, and the number will not greatly increase in 1958. This is not enough to meet the over-all demand, but most of this year's Ph.D.s will have to settle for something short of the plush $8,000 jobs available in 1956 and 1957. These jobs will be in short supply.

b) at the M.S. level? No. There were 548 Masters last year, and there will be more this year. About one fourth of them will continue graduate study, and the rest will be given employment preference over the new Bachelors.

c) at the Bachelor's level? Yes, except for the A students, who should continue with graduate study anyway.

Times have changed since mid-1957 in many fields, and in mineral raw materials the reaction to economic conditions started earlier and has been more violent than in any other discipline, with the possible exception of aeronautical engineering. The domestic oil and gas industry and metal mining operations are not in the market for new personnel, and even foreign exploration and development have been curtailed. The U.S. Geological Survey is wondering how it will hold its professional staff together in the face of budgetary cuts. Consulting geologists are a dime a dozen.

All that's left for 1958-59 is teaching and continued study, and this is good for the profession, if not for those who need income. Our departments need teachers with a higher level of training than have been available for several years. And there is no better place than the graduate school to ride out what may be a rough but brief period of over-supply. It's a good place at any time for those who want to make geology their life work.

SECOND EXPLORATION MANAGEMENT CONFERENCE

April 28-30

In response to the demand indicated by its first conference on *Management Problems in Exploration and Production* (see GeoTimes, Jan. 1958) held in January 1958, the American Management Association is sponsoring a second workshop seminar in New York, April 28-30.

The moderators for this second session will be H. H. Hinson, V.P. and General Manager, Foreign Department, Continental Oil Co. and W. H. Callahan, Mgr. Exploration, New Jersey Zinc Co. The workshop, benefitting from ideas generated in the January session, will concentrate on practical discussion of problems relating to planning and conduct of effective exploration and development programs.

The seminar will be limited to a relatively small group of registrants from the mining and petroleum industries. Persons interested in the conference should contact *American Management Association, JUdson 6-8100, 1515 Broadway, New York 36, N. Y.*

NSF RESEARCH GRANTS

Closing date
May 15, 1958

The Earth Sciences Program of the National Science Foundation is now receiving proposals for research grants that will be made in October 1958. Deadline for the receipt of proposals for work to begin in the fall or early winter is May 15, 1958. There are no formal application blanks, but a foundation pamphlet describes the method of making application and outlines information need in a proposal. This pamphlet may be obtained by writing directly to the *National Science Foundation, Washington 25, D. C., Attention: Earth Sciences Program.*

THE GEOLOGIST IN GREAT BRITAIN

By Trevor Greensmith[1]

In a recent GeoTimes article by Dorsey Hager—*"Fifty Years of Progress in Geology"*—the author refers to the improved status of the subject and its practitioners in the United States. In contrast, geology and geologists in Great Britain have not, as yet, attained the equivalence in the eyes of the general public with doctors, lawyers and ministers. There are possibly two exceptions to this generalization, the first being geologists employed in university teaching and the other, those employed by Her Majesty's Geological Survey.

In the former case, it is probable that the social status is more a direct reflection of the relatively high academic prestige enjoyed by universities in Britain than the subject itself which usually tends to be a secondary consideration. This reaction of the general public is quite natural in a country where less than one per cent of the total population—presumably the intellectual cream—are in the process of graduation at any one time. In the eyes of the majority, especially the lower income groups, the universities and their academic occupants acquire *ipso facto* a high status. Whether the subject studied or taught is Geology or Ancient Greek is immaterial.

The geologists attached to the Geological Survey likewise have social status—their high professional status is not open to doubt—but for reasons which are more diffuse. They are members of a branch of the Scientific Civil Service viz. Department of Scientific and Industrial Research and are therefore regarded with a certain amount of awe. The Civil Service is an essential part of government administration and the prestige that the service has as a whole is reflected into its various individual departments, both scientific and non-scientific. Moreover, as an official body, the Geological Survey is frequently called into consultation over problems involving the internal economy of the country and thus come into contact with a wider public than geologists employed elsewhere.

The reasons why geologists and geology (which received part of its initial impetus in Britain as a scientific discipline) should not be accorded their proper niche in the social framework are manifold and only a selection can be outlined here.

[1]Graduated B.Sc. (1952) and Ph.D. (1955) at Sheffield University. Now lecturer in Geology at Queen Mary College in the University of London. Currently engaged in research on Carboniferous sediments of Scotland.

Possibly the major stumbling block is the general lack of oil fields in Britain. It seems certain that the immense oil industry in the United States directly influences the public towards favorable thinking on geological topics. A small group of British oil pools exists in the Nottingham area and oil shales are worked in the Edinburgh area, but their contribution to what might be called the oil economy of the country is almost negligible and therefore they do not create a geological consciousness in the public mind. Similarly, large reserves of radioactive minerals are unlikely to be found in Britain and these are invariably more appealing to the layman than such prosaic subjects as coal field exploration which is nevertheless proceeding apace under government control.

A characteristic trait of the British way of life is an innate conservatism and it is particularly strong in most educational spheres. This conservatism—which should not be confused with stagnation—is commonly present in schools and usually becomes evident when the question of teaching geology is raised. The great majority of schools make no provision whatsoever for geological studies and their introduction is apparently achieved with great difficulty. The reasons for this are numerous and include shortage of qualified geology teachers, timetable and examination difficulties, low salaries as compared with industry and, regrettably, sheer obstructionism by senior officials who do not appreciate the cultural value of the subject. Fortunately, there is an increasing number of enlightened schools which include geology in their curricula but the influence of their teaching on the public awareness of geology will not be felt for many years. It appears more probable, for the next decade at least, that geology and geologists as such will not attain the position in the social and cultural framework of British society which they have already reached in the United States. The general public has still to be educated until the word geology becomes familiar and until the practitioner can avoid that rather embarrassing opening conversational gambit "What does a geologist do?"

WHEN YOU MOVE

Please advise us of your change of address at least one month in advance.

If you leave it to the post office—you don't get your GeoTimes and it costs us *real* money.

Popular Geology in Print

by Mark W. Pangborn, Jr.

Outstanding among the recent popular books on the I.G.Y. is ONCE ROUND THE SUN (Macmillan, 1958, $3.95) by British physicist *Ronald Fraser;* the serious high school student and adult will be intrigued by this concise, exciting discussion of the problems of geomagnetism, the atmosphere, ocean currents, and solar activity. Appealing to the same audience, but emphasizing geology, is THE PLANET EARTH (Simon & Schuster, 1958, $1.45); based on a series of articles, by leading authorities, which appeared in *Scientific American,* this volume is concerned with the earth's origin, interior, crust, and shape, geomagnetism, glaciers and oceans, and the atmosphere. Scarcely less meaty fare, and good reading for anyone age 13 up, is *Alexander Marshack's* THE WORLD IN SPACE (Nelson, 1958, $4.95), a richly illustrated history of geophysical research and its culmination in the I.G.Y.

Turning to the Polar regions, we are glad to see that *Walter Sullivan* has shortened his QUEST FOR A CONTINENT into WHITE LAND OF ADVENTURE (Whittlesey, 1957, $3.50), a good, brief history of Antarctic exploration, stressing the recent activities leading up to the current Geophysical Year program; just the thing for youngsters over 13 and uninitiated adults. *R. Frank,* in his ICE ISLAND (Crowell, 1957, $3.50), aims at the same audience, but the early explorers are given much fuller treatment.

For the 9 to 12 year-old group *Armstrong Sperry's* ALL ABOUT THE ARCTIC AND ANTARCTIC (Random House, 1957, $1.95) is an informative and well-written book on polar geography and exploration, ice and meteorology, animals and Eskimo life. Boys 10 to 14 will enjoy WE WERE THERE WITH BYRD AT THE SOUTH POLE, by *Charles S. Strong* (Grosset & Dunlap, 1956, $1.95), a reasonably realistic novel about an American boy who serves as radio operator aboard the whaling fleet which assisted Byrd during his 1928 expedition.

GEOLOGY in the Public Eye

by Robert L. Bates

Is geology a science? Are we scientists? A few years ago there would have been no question. Today, however, we are commonly excluded from the sacred brotherhood. It is no surprise, for example, to find that geology is not mentioned at all in a career booklet on opportunities in science and engineering put out by the National Association of Manufacturers. In the February *GeoTimes,* Howard Meyerhoff pointed out that geologists (and biologists) were excluded from Civil Service pay raises recently given to physicists, chemists, mathematicians, and, of all things, engineers. The way this reads, a chemist or an engineer with the USGS got a pay raise, but a geologist didn't. The biologists are raising a stink about being left out. Are we? Are we scientists, or are we mice?

Trivia geologica: The Earth Science Club of Northern Illinois may be up to date mineralwise, but they're still addressing the AGI's copy of their monthly newsletter to Dr. David M. Delo, who resigned as AGI director in 1952 . . . In *Punch* for Feb. 5, 1958, appeared a full-page ad for that British beverage called Guinness. It featured G-ology. "Common clay (like us)," the text runs in part, "find Guinness especially gneiss when suffering from erosion. It can be obtained in quartz." The British public must be more geology-conscious than ours . . . An editorial in the Salt Lake Tribune for Feb. 11, sent in by R. C. Resler, comments on the fact that the Russians have translated A. J. Eardley's *Structural Geology of North America* and published 15,000 copies, without asking permission or paying royalties. Dr. Eardley is convinced, with reason, that they read our literature, even if we don't read theirs . . . H. P. Zuidema sends in a story from the Detroit News about an undercut river bank in Ontario that endangered several buildings. Headline: Did Quicksilver Cause Slide? . . . Public awareness of geology *seems* to be the subject of a letter and a "Eugenics Pamphlet" from a gentleman in Sacramento, Calif. These items were forwarded by John Hills of Midland, with the comment, "I think the man may have a good idea if we can find out what it is." Indeed, yes. Anyone who would care to try may have both letter and pamphlet on request.

SCIENCH

. . . *The Diabolical Language*

by ROBERT V. KESLING[1]

An informer has passed the word along that my fellow word-detective and I (Stumm & Kesling, 1957, Jour. Paleontology, v. 31, p. 1019-1028) slighted a crime in scientific writing. We thought we had them all—hard-boiled inconsistencies, violent adjectives, crooked constructions, and pronouns from off the streets. There is still at large another killer of meaning, "Sciench," formerly known as "Padding" or "Gilding-the-Lily." In some manuscripts all simple statements have been annihilated.

Certain sinister workers have been communicating in a strange language, which (because they are convinced it is scientific style) may be called "Sciench." Our cryptographers broke the nefarious "scienchist" ring when an English translation was intercepted in an abstract. "Sciench" is coded from English by adding excess words, excess phrases, excess clauses, and even excess sentences. The table below gives some translations from this corrupted language.

Attention, authors! Be on the lookout for excesses. Arrest all malefactors in your first draft, bring them to the bar of common sense, and give them *proper sentences.* That is all.

[1]A member of the geology staff at the University of Michigan, Dr. Kesling is also curator of micropaleontology at the museum.

TRANSLATION OF SOME SENTENCES AND PHRASES

FROM "SCIENCH" TO ENGLISH

"Sciench"*	English
A method, which was found to be expedient and not very difficult to accomplish and which possessed a high degree of accuracy in its results, was devised whereby ...	An easy, accurate way to ...
The quantitative findings reported by Smith were analysed and seemed, according to our interpretation, to contain significant inconsistencies. Our reasons for attaining this diverse opinion are ...	We think Smith's measurements are wrong because ...
Of the utmost importance in this respect is the need to examine quantitatively the various instars which have not attained maturity, in order to evaluate and determine the validity of the theory which Przibram has advocated.	To test Przibram's theory, all immature instars must be measured.
Our research, designed to test the correlation of the total number of chambers to the maximum length in P. oblongus, was carried out by counting the number of chambers, measuring the maximum length, and recording the results in tabular form. In the course of our investigation, a relatively large number of specimens was utilized. One hundred excellently preserved shells were selected for examination. It was discovered that, in this group of specimens, at least, a specific chamber count corresponded to several lengths, which varied greatly. Conversely, for a particular length, the number of chambers was not constant. We find it impossible, therefore, to correlate ...	In the 100 well preserved specimens of P. oblongus studied, the number of chambers has no relation to the maximum length.
One might well be censured for having so tenaciously propounded this hypothesis in view of the overwhelming weight of evidence to the contrary.	I was wrong.

*Any resemblance to my own articles, living or dead, is purely coincidental.

UNTERMANNS *(Continued from page 10)*

of the Uintahs, more than 100 of which now repose in the Utah Field Museum in Vernal of which his son is now director.

Although born in the Middle West, young Ernest took an early interest in geology around Vernal. Later, at the mature age of 14, while going to high school at Mt. Carmel, California, he expressed a very positive preference for one potato salad over another at a church picnic. When he was beginning his college studies in geology several years later he met Mrs. Andrew Lawson on the street in Berkeley. He had to answer an embarrassed "yes" when she asked "Young man, aren't you the one who didn't like my potato salad?" Apparently Ernest and Andy didn't let the potato salad stand between them, for he received his bachelors degree in geology under Dr. Lawson and later received his masters degree in paleontology and stratigraphy at the University of California.

More than casual interest in Dinosaur National Monument can be claimed by Ernest Untermann's wife Billie, whose maiden name was Ruple, for she was reared on the Ruple Ranch in the Island Park area which is now a part of Dinosaur. Ernest met Billie "swinging on the gate." She too majored in geology at the University of California, receiving her bachelors degree in 1929 and her masters degree in 1934. She was curator of the geology museum at Berkeley from 1931 to 1936.

The Untermanns' first opportunity for serious geologic study of Dinosaur Monument came in 1943 when they were employed by the Park Service as ranger-naturalists. Daniel B. Beard, son of the founder of the Boy Scouts, was superintendent of Dinosaur at that time, and he encouraged them to start the geologic mapping. When government funds ran out the Untermanns finished the work "on their own." This work had commercial significance for it was well under way when the nearby Rangely (Colorado) oil field was discovered.

In an effort to keep the fossils from being removed from the Vernal area, Arthur G. Nord, Assistant Regional State Forester, was instrumental in forming a museum committee in 1942. The Utah State Legislature in 1945 approved a bill establishing the local museum and in 1946 $200,000 was authorized for construction through the Utah Department of Publicity and Industrial Development. When the Utah Field House of Natural History was completed, Ernest Untermann was made director and both Ernest and Billie serve the museum as curators.

The record of geologic investigations of the Dinosaur Monument area began in 1869 when Major John Wesley Powell, en route down the Green River, tied his boats to a big cottonwood tree in the vicinity of what is now the quarry area of Dinosaur. It was some 40 years later, however, that Earl Douglass, of the Carnegie Museum, made the discovery of the dinosaur beds, a scant half mile from Powell's camp site. It remained for the Untermanns, Ernest and Billie, to work out the geology of the area through the field work which began in the forties.

Ernest Untermann has contributed not only to the scientific literature but also to to the *Congressional Record* for the 83rd Congress, as a part of a speech by Senator Watkins on March 22, 1954, includes a very masterful and humorous dissection of Columnist Fred Othman by G. E. Untermann in connection with the Echo Dam controversy and Dinosaur National Monument.

The geologist team of Ernest and Billie Untermann is now extending geological work into Duchesne and Uintah counties as a contribution to the Geological Atlas of Utah.

SCOUT MAGAZINE

Cites AGI Literature

Boy's Life, official magazine of the Boy Scouts of America, carries a short article entitled *Rock Hounds* on page 62 of the April issue. The article cites the new AGI career booklet, *"Shall I Study Geological Sciences?"* and *"EARTH for the Layman,"* the Institute's new comprehensive listing by Mark W. Pangborn, Jr., of nearly 1400 good books and pamphlets on geology, petroleum, mining and related subjects.

Boy's Life goes to 1,700,000 Boy Scouts, many of whom got their first introduction to geology during Geology Month in Scouting, October 1957.

W. B. Page C. W. Beckham

"I say! Mister, Will that thing shoot? Take it away, it skeers my critter."
Original sketch and title by John R. Proctor, 1874.
by courtesy of Willard R. Jillson

Geologists in Recession—*from page 7*
duce ore in the amounts needed and the company is faced with the alternative of going out of business, more or less quickly, or of buying ore-bearing or ore-producing properties from others who have been fortunate enough to find them. As such purchases are almost always made in a rising market and only properties of proven value are bought, the price commanded is far higher than it would have been had the ore been discovered by the long since abandoned or greatly reduced exploration department.

The average mining company would say that it is well aware of the higher costs of finding ore under the conditions just outlined but would go on to point out that, economically, it has very little choice in the matter. It can stay in business only as long as it pays its way or, in more favored cases, until it has used up its financial reserves and its reserves of credit. Its ore reserves are of relatively little importance in a time of recession or depression—therefore it can much more easily dispense with the finding of new ore than it can with its cash balances or its reputation for meeting its bills. In short, it would seem that the individual mining company cannot be expected to do other than drop its exploration activities as its income goes down and hope that when times improve it can somehow recoup its reserve position without pricing its product out of the rising market. Because rising markets usually can stand almost any price boost in basic materials, this is generally possible, and the cost of hurried exploration programs is just another charge which adds to the inflationary pressures which in the long run will again bring down the economy into another period of recession.

U.S. Mining Jeopardized

It would seem then that any mining company which can ride out a depression will eventually recover its lost profits and will average out its good and bad years to something that comes close to the profit pattern of businesses less strongly affected by the fluctuations of the economic cycle. There is, however, in the mining industry more chance of permanent damage to its individual companies and to its entire structure than for most types of U.S. business enterprises. This is largely due to two factors; (1) the great damage that a shutdown can do to a mine, damage far worse than would be suffered by any kind of factory operating on the surface of the earth and (2) the very real danger of the bulk of the market of the shutdown mine being permanently lost to it no matter how much the economic climate may improve in the future. These two factors must be recognized if the true effect of mine shutdowns and curtailed exploration programs in the economy of the country and of the free world is to be appreciated. If the period of lowered demand and falling prices is long enough and affects enough mineral raw materials, the U.S. mining industry could well be so badly damaged, physically and economically, as to be finished as an effective source of supply of even a considerable fraction of the nation's raw material requirements. Already the present recession has done great damage to the country's copper, zinc, lead, and tungsten mining industries, has hurt the petroleum industry badly, and has stopped the long-awaited upward progress in bituminous coal mining which had seemed so hopeful in the last few years. If the drop in demand and prices continues, there probably will be consequences from which the industry well may not recover.

An abandoned farm ordinarily improves through lying fallow for a few years; this is not true of the mine which at best must be pumped out when production is to be resumed and which at worst will cost more to reopen than the minerals it contains will be worth. That many of the mines which have been put into operation in the last few years should have been held in reserve and not exploited is obvious now, particularly since many of them must operate at a high output if they are to show a profit. The situation is further complicated by higher prices charged for domestic materials than for imported. In the first half of the 1950's the reverse was true, and it seemed that any increase in U.S. tonnage could be absorbed in this country because demand so greatly exceeded domestic production. Foreign producers have, however, been able to reduce prices below those which domestic operators can or will charge for their products (including the tremendous profits they must have been making through 1955 at least), leaving to U.S. producers only that share of the domestic market which foreign surpluses cannot meet. If we actually reach the point at which our mining industries are limited to no more than this fraction of the U.S. market, only the lowest cost producers will be left in business, and the possibility of their being able to find additional properties in the United States in the operation of which they could keep down their costs is essentially nil. It follows then that as long as the bulk of the low cost mines of the world are outside the U.S., the share of

PRESIDENT EISENHOWER'S COMMITTEE

Distributes AGI Career Booklet

The President's Committee on Scientists and Engineers, as a part of its local action program, has assembled a guidance kit to aid in the counselling of high school students on careers in science and engineering.

This kit includes the new AGI career booklet *"Shall I Study Geological Sciences?"* Also included is the recent U. S. Dept. of Labor Bull. 1215-4 *Employment Outlook in the Physical & Earth Sciences* (Supt. of Docs., U.S. Govt. Printing Office, $0.20)

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the domestic market retained by American operators will steadily decline.

AN EMERGENCY—WHAT THEN?

Perhaps at first glance this would seem to be a problem for the mining companies only; the remainder of the economy would do as well or better by importing more and more mineral raw materials from abroad than by supporting through some sort of subsidy, tariff or other, our domestic mines. Yet this is, to say the least, a short sighted view. In the present politically unstable situation throughout the world, we may at any time bt thrown largely or entirely on our own resources for mineral raw materials. Where then do we stand if we have allowed our mining industry to be crippled by foreign competition and lose our access to all or most of our foreign suppliers? Obviously in a most unenviable position which all the effort we can put forth will at that time not be able to correct.

We must, therefore, for our safety's sake if for no other reason, keep our mining industry as a going concern. We could as safely decide that our farm problem is so great that we will give up farming as a major field of endeavor and import the bulk of our food stuffs from abroad. In short, the problems of how to keep our mining companies in business, of preventing them from cutting production to below the tonnage they must produce to operate at a profit, and of keeping their exploration departments and exploration geologists hard at work all the time are of national significance. We cannot let the laws of supply and demand alone control the answer, there must be planning on a national level which, while it will keep the exploration geologist on the job, will also provide a sound raw mineral material base on which the economy can depend.

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DEAR EDITOR:

The recent Career Conference for High School Students on engineering and Sciences, conducted by San Francisco Engineering Council brought forth a number of students who expressed an interest in geology.

I enjoyed the opportunity of discussing geology with the selected group of high school students, and feel that the approach at this educational level certainly holds many promises. Above all, the fact that the AGI had a career booklet assembled was of exceptional value. You are to be congratulated on making such a worthwhile and understandable booklet available to the high school students.

Thank you again for your assistance.

Sincerely,

GEORGE A. KIERSCH
Oakland, Calif.

DEAR EDITOR:

We would like to clarify a misleading statement in the article "*U.S.G.S. Cited by Antioch College*" appearing in the January issue. The statement "although Antioch does not grant degrees in geology, they offer a number of geology courses" implies we do not have students majoring in geology and only a few geology courses. On the contrary, we have had students majoring in geology for a long time.

It may be interesting to note that over 90 per cent of our students concentrating in geology have gone on to graduate schools where they have continued work in geology.

Sincerely yours,

JOHN F. WHITE
Department of Earth Sciences
Antioch, College

EDITOR'S NOTE: We greatly regret this error.

DEAR DR. VON BANDAT:

I read with interest your discussion of the surface of Mars in *GeoTimes*, and wish to take exception to your crediting me with the statement that appears on page 14. You say "Therefore we may assume with Urey and Barnes that tektites are molten particles of once molten sediments from an exploded asteroid." It has been my contention that tektites are indeed molten sediments but that they originated from the earth. I believe Barnes' arguments in regard to this are very good. If I understand Barnes, he thinks they are molten sediments that came from another planet. It is impossible for sediments to have been formed on an asteroid because the gravitational field of an asteroid is so low that no liquid water could be maintained on its surface and hence no sediments could have formed.

I believe the next sentence also, which you italicize, cannot be correct: "Since existence of extraterrestrial sediments has been proved, the similarity of sediments on Mars and Earth is likely and logical." I do not think it has ever been proved that there are any extraterrestrial sediments, even though it may be that there are indeed sediments on Mars.

Sincerely yours,

HAROLD C. UREY
University of Chicago

DEAR EDITOR:

I read with interest "Martian Features" by Horst von Bondat in January 1958 *GeoTimes*. I am an astronomer with a minor in Geology, and 30 years experience in assiduous observations of Mars. For 14 years, I was on the observing staff of the Lowell Observatory at Flagstaff, Arizona.

There are some misconceptions in the article that should be pointed out:

"The canals were photographed by various members of the Lowell Observatory staff long before 1954. The first man to succeed in photographing the canals was the late Dr. C. O. Lampland in May, 1905, at Flagstaff. See pages 275-277 in Lowell's book, MARS AND ITS CANALS. Canals have been photographed at every opposition since 1905 by various members of the Lowell Observatory staff. I have personally, checked many photographs of Mars taken by Dr. E. C. Slipher on an expedition to Chile, in 1907, and they show a few dozen canals. A few of the stronger canals show on photographs taken by various other observatories over the world, as early as 1909."

The absence of both white salt areas and dendritic drainage patterns indicate that Mars never had any oceans. Consequently, there can be no sedimentary rocks

ROCK CHIPS

by SANDSTONE SAM

The smart geologist can always be spotted—his views are the same as yours.

• • •

"Pamour Porcupine Mines, Ltd., paid no dividends during the year. Gold ore reserves at year end were 1,618,811 tons, 0.101%." (Source: E & M J) The old prospector notes that inflation must really be tough on these chaps—$100 per ton ore (29.5 ounces) and no dividends!

• • •

A student in historical geology reported that "*Crossopterygii*" was the name of an ancient astronomer who believed that the earth was about 3.5 billion years old.

• • •

The field geologist can sympathize with the centipede who said "When my feet hurt, I hurt all over."

Ss Sam Needs *Your* Financial Vote of Confidence

Use the green envelope (Feb. Geo-Times) to send in your 1958 contribution

and no rock minerals with origins that are peculiar to sedimentary processes.

Sincerely yours,

CLYDE W. TOMBAUGH
State College, N. M.

DEAR EDITOR:

Please tell Mr. Roy L. Ingram and the University of North Carolina to stick to their guns in providing high school science teachers with some real science. The "colleagues in neighboring institutions" who complain of "watered-down degrees" are probably using the accusation to hide their inability to face the problem: too many secondary school teachers of science are well trained teachers but learn too little science to teach it convincingly and interestingly.

After decades of talk, many organizations and institutions are going into action. Graduate courses for teachers of science are being given NOW in many schools. Geology departments can pitch in and promote the teaching of science in high schools or can, by default, leave geology out in the cold.

WILLIAM R. THURSTON

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NATIONAL ADVISORY COMMITTEE ON RESEARCH IN THE GEOLOGICAL SCIENCES, *7th Annual Rpt., 1956-57, 165 pages, Dec. 1957, Geological Survey of Canada, Department of Mines and Technical Surveys, Ottawa, Canada, $0.50.*

This report on the frontiers and status of geological research in Canada is helpful to the geologist contemplating geological research in Canada. The survey of current investigations is very helpful in keeping abreast of the work being done in all parts of the country.

The attention of the reviewer is drawn particularly to the following excerpted quotations credited to C. E. Michener: "For lack of greater knowledge regarding the nature of ore-forming processes the geologist today is using the empirical methods which have been in use since the profession became a useful part of the mining industry, some fifty odd years ago . . . The economic geologist is faced with the dilemma of being outstripped by his confederates in allied fields."

These comments are just as true, or more so, south of the Canadian border, where relatively few economic geologists have vision to perceive research frontiers.

FINDING FOSSIL MAN, *by Robin Place 126 pp., Philosophical Library, N. Y., 1957, $7.50.*

Intended for an audience of young students and the general reader. For this purpose this little book dealing with a specialized field is well done. A specialist might be more exact but less lucid. The author has a gift for popular writing, has selective ability, can deal with the many facets of the subject, and yet is reasonably accurate.

M. M. L.

OLD STONE AGE, *by Stevan Celebonvic, 96 pp., 1957, Philosophical Library, New York, $10.00.*

A beautifully illustrated volume, 11" x 8½", with 64 full page plates presenting a record of artistic works credited to prehistoric man. This is the second volume in a series. The first was *The Living Rocks.*

STATUS OF TOPOGRAPHIC MAPPING IN THE UNITED STATES, *January 1958 Edition, U.S. Geological Survey, Map Information Office, Washington 25, D. C., free on request.*

ARTIFICIAL STIMULATION OF RAIN, *Edited by Helmut Weickmann and Waldo Smith, 427 pp., 1957, Pergamon Press, 122 E. 55th Street, New York 22, N. Y., $15.00.*

Proceedings of the first conference on the physics of cloud and precipitation particles, Woods Hole, Mass., Sep. 7-10, 1955.

STATUS OF AERIAL PHOTOGRAPHY IN THE UNITED STATES, *January 1958 Edition, U.S. Geological Survey, Map Information Office, Washington 25, D. C., free on request.*

HAMMOND'S AMBASSADOR WORLD ATLAS, *Fifth Printing 1957, 416 pp., C. S. Hammond & Co., Maplewood, New Jersey, $12.50.*

A geologist does not need, of course, to be sold on the value of maps, but the perpetual educational process that results from having a good atlas within arm's reach may not always be fully appreciated. This atlas with its political, physical, climate, vegetation, agriculture, population distribution, resource and other maps provides constant food for the roving scientific mind. Detailed geographic data and world projections are well presented in this atlas. It is well-indexed and includes numerous helpful tables.

IGY BULLETIN

The *IGY Bulletin*, official monthly publication of the U.S. National Committee for the International Geophysical Year, may be obtained at a subscription rate of $4.00, including all back issues to July 1957, from the Publications Office, National Academy of Sciences, 2101 Constitution Ave., N.W., Washington 25, D. C.

The *Bulletin* includes brief articles and reports on projects and experiments in a dozen different scientific fields covered by the US-IGY program as well as available news of IGY activities in other countries. The IGY programs covered are: aurora and airglow, cosmic rays, geomagnetism, glaciology, ionospheric physics, longitude and latitude, meteorology, oceanography, seismology and gravity, solar activity, world days and communications, and rockets and satellites.

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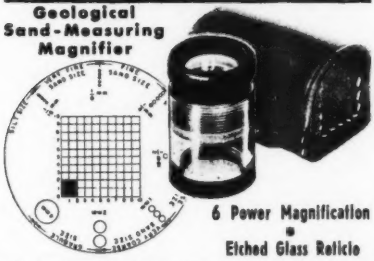

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Salary and rank in these positions commensurate with training and experience. Applicants are requested to send a record of training and experience, recent photograph and names of three referees to: Secretary, Research Council of Alberta, 87 Avenue and 114 Street, Edmonton, Alberta, Canada.

MARIETTA COLLEGE, Marietta, Ohio. Opening September 1958 for qualified instructor to teach paleontology, sedimentation-stratigraphy, etc. Apply W. G. Steel, Department of Geology.

APPLICATIONS ARE INVITED for the position of Professor and Head of Department in Geology, on the scale $6800-100-8400, to take effect at 1st September, 1958. Assistance towards transfer expenses is contributed by the University. Applications, with complete curriculum vitae, and the names and addresses of three referees should be addressed to the President, Memorial University of Newfoundland, St. John's, Newfoundland, Canada.

UNIVERSITY OF NORTH DAKOTA—Grand Forks, North Dakota. Assistant Professorship beginning September 1958. Ph.D. required. Area: Petrography and Economic Geology. Write Wilson M. Laird, Department of Geology.

HOFSTRA COLLEGE, Hempstead, N.Y. Ph.D. to teach mineralogy and petrography. Rank and salary dependent upon qualifications. Write F. Durham, Chairman Dept. Geology.

WANTED: Museum Curator, Colorado School of Mines, Department of Geology, Golden, Colorado. Want man 45-50 years old, possibly some teaching, strong academic and professional background in mineralogy. Ph.D. given preference. Write Dr. L. W. LeRoy, Head, Dept. of Geology for details.

INSTRUCTOR or assistant professor wanted to teach courses in Mineralogy and Petrology and help with the laboratory work of the introductory course in southern university with high standards and strong liberal arts tradition. Please write for further details and outline your training and experience to BOX 88.

VERMONT GEOLOGICAL SURVEY — state parks mapping project, geologist capable of writing for the layman. Write State Geologist, Burlington.

POSITIONS WANTED

BOX 359. GEOLOGIST, B.S., 6 years exploration in the Four Corners, Panhandle and West Texas. Experience includes seismograph and administration. Desires more responsibility. Excellent references.

BOX 392. GEOLOGIST, BA, married, 3½ years mapping, areal and detailed, metallic and nonmetallic mineral evaluations. Photogeology, some geophysics, report writing.

BOX 395. GEOLOGIST, M.A., Ph.D. residence requirements completed, dissertation partially completed; field and teaching experience. Desires teaching position in either Mineralogy, Elementary Geology, Structural Geology or Geomorphology. Single, 26. Available September 1958.

BOX 397. GEOLOGIST, 29, married, 6 years varied experience in all types of mineral deposits for USGS, state and private employers. Exploration main interest, desires western U.S. or possible foreign position. Excellent references. Presently employed, available on reasonable notice.

BOX 398. WHO NEEDS A 29 YEAR OLD, married exploration geologist with varied mineral deposit experience who can write? Has written articles and reports for all levels of geological interest and knowledge. Open to any attractive offer.

BOX 404. ECONOMIC GEOLOGIST, PETROLOGIST, Ph. D., actually employed as Visiting Professor at a well-known institution, desires similar position for next year, or permanent affiliation with a geology department of high professional standards. Will also consider research, exploration, or subsurface work. Has taught all geology subjects with exception of intermediate and advanced paleontology and possessed of functional experience. Very good references and available in June 1958.

BOX 407. SEDIMENTOLOGIST: facies analysis, micro-paleoecology; Ph.D., 18 years diversified oil company and university experience; seeks foreign or domestic research or exploration position.

BOX 417. GEOLOGIST, 35, Ph.D. in June 1958, B.S. in Electrical Engineering, experience with U.S.G.S. Desires teaching position in college or university, preferably in western U.S. Interested principally in structural geology and stratigraphy.

BOX 420. GEOLOGY PROF. desires to relocate west of 105° W Long. Widely varied background in both education and experience. BA and MS degrees. Want position that affords some research and/or consulting opportunity. Available 1 June 1958.

BOX 428. PALYNOLOGIST, MS, 31, married, two years collegiate, three years industrial experience in Spore and Pollen field. Desires to relocate with company interested in such a program. Would also consider college undergraduate teaching position with research and advanced degree possibilities in Palynology.

BOX 429. MINERALOGIST-GEOLOGIST, Ph.D. Seeks teaching position with opportunities for research and professional growth. Major interest: mineralogy and crystallography. Experience: field work, 1½ years; teaching, 2 years; research (X-ray diffraction analysis) 2 years. Available: Fall, 1958.

BOX 432. GEOLOGIST, Ph.D., 48, wife and child, 18 years broad experience in Economic Geology, Mineralogy, Tectonics, Mining and General Geology, Petrography; detailed and reconnaissance mapping in wide areas of Europe, Asia and North America; all phases of exploration and research; have publications and an invention patent; speak English, German, Russian, Turkish and several less known oriental languages; seek position in research or exploration, will consider teaching or consulting.

BOX 433. GEOLOGIST, Ph.D., 48, family, desires teaching position particularly in Elementary Geology, Mineralogy, Petrology, Economic Geology, or Structural Geology. Presently employed by U.S.G.S. Experience includes 9 years teaching, part as head of small department. Available for Summer or Fall opening.

BOX 434, GEOLOGIST, Ph.D., desires permanent teaching position. Interest in teaching Elementary Geology, Sedimentation, Stratigraphy, ground water, Engineering Geology, Economic Geology, Metamorphic Geology. Ten years experience in teaching, USGS, industry.

BOX 438. GEOLOGIST, 26, married, B.S., some graduate work, desires position in laboratory, petroleum or minerals, available immediately.

BOX 445. GEOLOGIST, B.S., 26, recent graduate, family. Desire position as geologist. No specialities, average student, well rounded background. 4 years drafting experience.

BOX 447. GEOLOGIST, B.S., married, vet, expects M.S. in June 1958, desires position in exploration, research or teaching, domestic or foreign. Main interests in stratigraphy, sedimentology, micropaleontology and paleontology. Available June.

BOX 448. GEOLOGIST, Ph.D., 37, with 16 years field and teaching experience desires university appointment. Present head of three man department of geology in small eastern university. Experience includes six years as state geologist with consequent administrative experience; wide ranging field activities; active publications list; widely travelled.

BOX 449. GEOPHYSICIST, Canadian, B.Sc. mathematics and physics, Ph.D. physics, finishing two years overseas research geophysics, 29, married, seeks responsible industrial or university position in Canada or United States starting Autumn 1958.

BOX 450. GEOLOGIST-HELICOPTER PILOT, 27, M.S. in Geology, 3 years flight experience in U.S. Marine Corps. Understands the problems of operating and maintaining helicopters in the commercial field. Wishes to associate with investment, consultant, or exploration group. Most interested in percentage of a new company with reliable persons. Will also consider salary with large company. Willing to undertake domestic or foreign work. Petroleum or Mining.

BOX 451. GEOLOGIST, 49, Ph.D., married. Experienced and capable. Desires position in small college or university. Prefer undergraduate teaching.

BOX 452. UNIVERSITY OF WISCONSIN graduate with B.S. and M.S. in geology. Single (but with responsibilities), 28. Photogeology, drilling and exploration experience in Newfoundland and South America with two large U.S. mining firms. Engineering experience with U.S. Army in the Far East.

BOX 453. MINING EXPLORATION GEOLOGIST. Ph.D., 48. Foreign or domestic. Geophysical experience.

CIVIL ENGINEER, 40 years experience, geological and all kinds of surveys in the States and in Latin America, Assistant to geologists on exploration, highways design and construction, building construction, etc. Available for work in Central or South America. Apartado 4165, San Jose, Costa Rica.

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(Continued on page 28)

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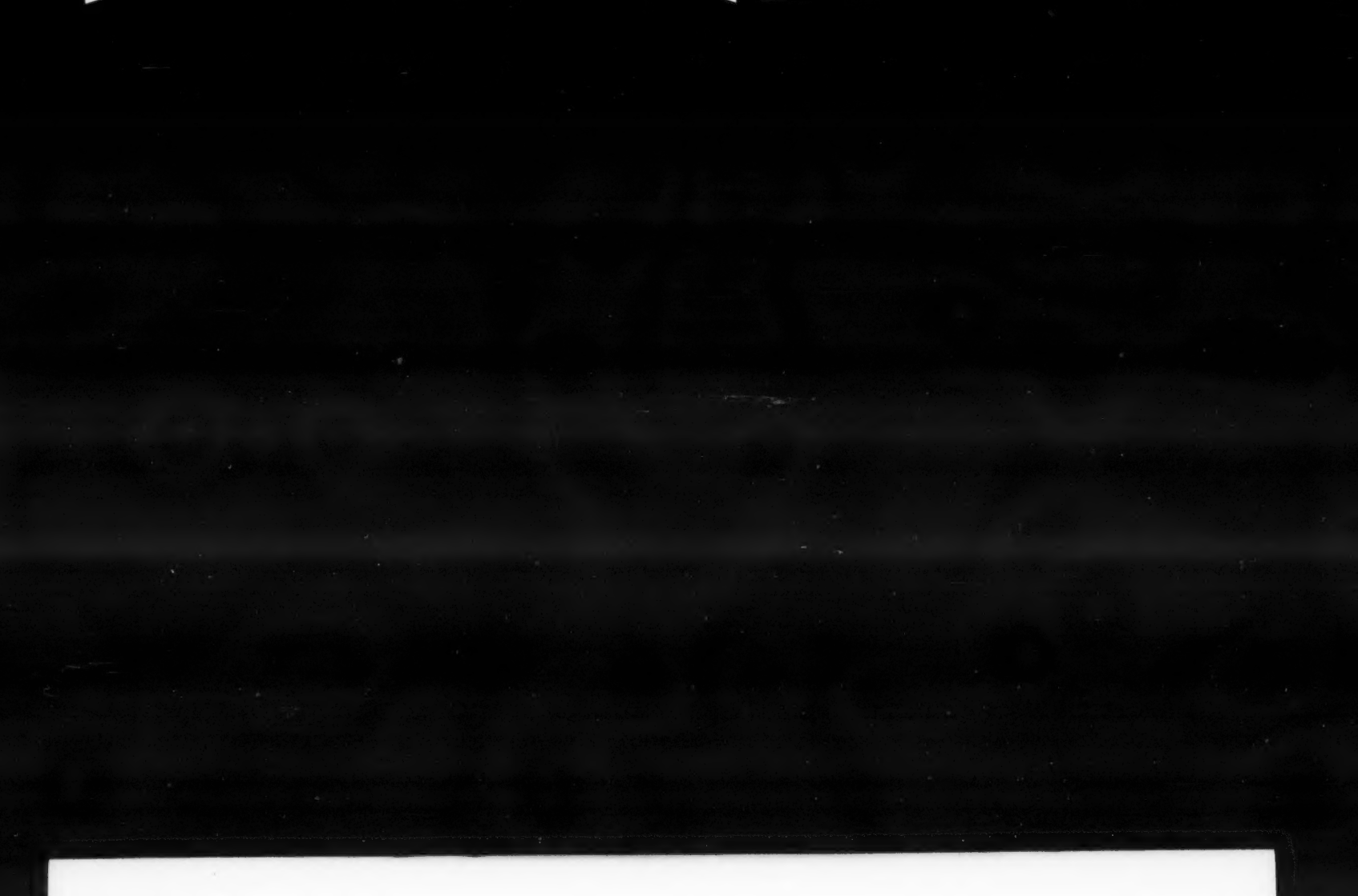

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